IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (original): A method for calculating edge functions for a patch of pixels, comprising the actions of:

computing edge function values for at least one interior point within said patch; and

computing edge function values for multiple other points within said patch, using an arithmetic combination of

said edge function values for said interior point,

together with previously computed values of said edge functions for points on the border of said patch,

together with a reduced set of offset vectors.

2. (original): A method for calculating edge functions for a patch of points, comprising the actions of:

computing the value of an edge function at an interior reference point within said patch, and at a boundary reference point on the edge of said patch; and

assessing the value of said edge function at multiple other points within said patch, by comparing

the value of said edge function at a respective reference point, which may be said interior reference point or said boundary reference point or a previously computed reference point, with

the delta value of said edge function for a respective one of a reduced set of offset vectors;

wherein said reduced set of offset vectors does not include vectors which are complements or shifts of each other.

3. (previously presented): The method of Claim 1, wherein said patch comprises 64 pixels.

4. (previously presented): The method of Claim 1, wherein said patch is an 8x8 tile.

5. (previously presented): The method of Claim 1, wherein only one interior point edge function value and the edge function value for one new point on said border are computed for a successive patch.

6. (previously presented): The method of Claim 1, wherein said patch has one interior point edge function value and edge function values for four points on said border.

7. (previously presented): The method of Claim 1, wherein a pixel within said patch is referenced against at least one of said edge function values.

8. (previously presented): The method of Claim 2, wherein said patch comprises 64 pixels.

9. (previously presented): The method of Claim 2, wherein said patch is an 8x8 tile.

10. (previously presented): The method of Claim 2, wherein only one interior reference point and one new boundary reference point are computed for a successive patch.

11. (previously presented): The method of Claim 2, wherein said patch has one interior reference point and four boundary reference points.

12. (previously presented): The method of Claim 2, wherein a pixel within said patch is referenced against at least one of said reference point values.

13. (previously presented): A method for rapidly testing the half-plane membership of successive patches of pixels, comprising:

a step for calculating half-plane membership function value for at least one reference point pixel at the boundary of a first patch of pixels;

a step for calculating values of said half-plane membership function for at least some pixels in said patch; and

a step for using an inheritance relation to carry forward the half-plane membership function values of said reference points for a successive patch of pixels;

wherein the computational load is minimized.

14. (previously presented): The method of Claim 13, wherein each patch comprises 64 pixels.

15. (previously presented): The method of Claim 13, wherein each patch is an 8x8 tile.

16. (previously presented): The method of Claim 13, wherein only one interior reference point and one new boundary reference point are computed for a successive patch.

17. (previously presented): The method of Claim 13, wherein each patch has one interior reference point and four boundary reference points.

18. (previously presented): The method of Claim 13, wherein a pixel within a patch is referenced against at least one of said reference point values.

19. (previously presented): A method for rapidly testing the half-plane membership of successive patches of pixels, comprising:

a step for calculating half-plane membership function value for at least one reference point pixel at the boundary of a first patch of pixels;

a step for using symmetry relations between said reference points and a patch of pixels to provide a reduced set of offset vectors which define the locations of pixels within said patch with respect to respective ones of said reference points and corresponding offset values of said half-plane membership function;

a step for using an inheritance relation to carry forward the half-plane membership function values of said reference points for successive patches of pixels; and

a step for combining a half-plane membership function value at one of said reference points with an offset vector value corresponding to the one of which locates a respective pixel in relation to said respective reference point;

wherein the computational load is minimized.

20. (previously presented): The method of Claim 19, wherein each patch comprises 64 pixels.

21. (previously presented): The method of Claim 19, wherein each patch is an 8x8 tile.

22. (previously presented): The method of Claim 19, wherein only one interior reference point and one new boundary reference point are computed for a successive patch.

23. (previously presented): The method of Claim 19, wherein each patch has one interior reference point and four boundary reference points.

24. (previously presented): The method of Claim 19, wherein a pixel within a patch is referenced against at least one of said reference point values.

25. (previously presented): A method for rapidly testing the half-plane membership of successive patches of pixels, comprising:

calculating half-plane membership function value for at least one reference point pixel at the boundary of a first patch of pixels;

calculating values of said half-plane membership function for at least some pixels in said patch;

combining half-plane membership function value at one of said reference point with a function offset;

using an inheritance relation to carry forward the half-plane membership function values of said reference points for each successive patch of pixels; and

using symmetry relations between said reference points and a patch of pixels to provide the correct offset values for the pixels within said patch;

wherein the computational load is minimized.

26. (previously presented): The method of Claim 25, wherein each patch comprises 64 pixels.

27. (previously presented): The method of Claim 25, wherein each patch is an 8x8 tile.

28. (previously presented): The method of Claim 25, wherein only one interior reference point and one new boundary reference point are computed for a successive patch.

29. (previously presented): The method of Claim 25, wherein each patch has one interior reference point and four boundary reference points.

30. (previously presented): The method of Claim 25, wherein a pixel within a patch is referenced against at least one of said reference point values.

31. (previously presented): A computer system comprising:
a host processor; and
a device for
calculating the half-plane membership function value for pixels at the boundaries of a first patch of pixels for use as reference points; and
rapidly computing half-plane membership function values for successive patches of pixels, by
using an inheritance relation to carry forward the half-plane membership function values of said reference points for ones of said successive patch of pixels;
wherein the computational load for each successive patch is minimized.

32. (previously presented): The system of Claim 31, wherein each patch of pixels comprises 64 pixels.

33. (previously presented): The system of Claim 31, wherein each patch of pixels is an 8x8 tile.

34. (previously presented): The system of Claim 31, wherein only one interior reference point and one new boundary reference point are computed for each successive patch.

35. (previously presented): The system of Claim 31, wherein each patch has one interior reference point and four boundary reference points.

36. (previously presented): The system of Claim 31, wherein each pixel within a patch is referenced against at least one of said reference point values.

37. (previously presented): A computer system comprising:

a host processor; and

a 3D graphics rasterizer comprising:

means for generating reference point values by evaluating the half-plane membership function value at one or more reference points in a tile of pixels;

means for referencing a pixel within said tile against one of said reference points;

means for stating the position of said pixel as an offset from said reference point;

means for shading said pixel according to the reference point value; and

means for determining whether said pixel is inside or outside of an edge by comparing the reference point value with the offset to said pixel.

38. (previously presented): The system of Claim 37, wherein said reference points are the top left pixel, the top right pixel, the bottom left pixel, the bottom right pixel, and the middle pixel of said tile.

39. (previously presented): The system of Claim 37, wherein each tile comprises 64 pixels.

40. (previously presented): The system of Claim 37, wherein each tile is an 8x8 tile.

41. (previously presented): The system of Claim 37, wherein only one interior reference point and one new boundary reference point are computed for successive tiles.

42. (previously presented): The system of Claim 37, wherein each tile has one interior reference point and four boundary reference points.

43. (previously presented): The system of Claim 37, wherein each pixel within a tile is referenced against at least one of said reference point values.